
Conjugation of proteins to polymer chains to create multivalent molecules.

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Public Summary:

The activation of cellular signaling cascades, critical for regulating cell function and fate, often involves changes in the organization of receptors in the cell membrane. Using synthetic multivalent ligands to control the nanoscale organization of cellular receptors into clusters is an attractive approach to elicit desired downstream cellular responses, since multivalent ligands can be significantly more potent than their corresponding monovalent ligands. Synthetic multivalent ligands can serve as both versatile biological tools and potent nanoscale therapeutics, for example in applications to harness them to control stem cell fate in vitro and in vivo. Here we describe the use of recombinant protein expression and bioconjugate chemistry to synthesize multivalent ligands that have the potential to regulate cell signaling in a variety of cell types.

Scientific Abstract:

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